

The Grand Canal in Republican China

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The Grand Canal Project in Republican China

Abstract

Since the late imperial era Yellow River floods have endangered the environmental equilibrium of North China, including parts of the Grand Canal. The Republican government's response to water disasters reflected the influence of global networks and institutions of expertise. By turning to an American company for infrastructure work on the Grand Canal, Chinese government officials placed their faith in global science and finance to renew a domestic symbol and function of state power. The project failed; nonetheless the efforts to restore the waterways and provide relief reveal the entangled humanitarian, corporate, and educational interests of modern China's state building and environmental management.

Keywords

American-Chinese relations – Environment – Grand Canal – Humanitarianism and
Philanthropy – Infrastructure and Science

Introduction

In spring 1921, the global project to repair the Grand Canal ground to a standstill. The product of a partnership between the Chinese government and an American corporate entity, the Grand Canal project symbolized an entwined, hybrid aspiration of humanitarianism and post-colonial developmentalism. Damaged by floods and neglect

over the past century, in some ways it was not surprising that the global attempt to restore the Grand Canal failed. Historically, the Grand Canal has long been a symbol of Chinese imperial power. To carry grain tax from fertile Jiangnan to the changing political centers of the north, the first parts of the canal were constructed before the unification of the Chinese empire under the Qin (221-206 BC) and consolidated during the Sui dynasty (581-618), assuming its final permanent route during the Ming dynasty (1368-1644). The ebb and flow of the Yellow River, the silt-laden artery that was at once the heart of the origin stories of Chinese civilization and also called “China’s Sorrow” for the human suffering caused by its floods, directly affected the Grand Canal, drawing the canal into the “environmental entwinement” of the Yellow River and the North China (Hebei) plain. Historian Zhang Ling argues that as the Northern Song state (960-1127) was caught in a “hydraulic mode of consumption” that “extracted political capital, labor, and other resources and channeled them toward the bottomless black hole of the Yellow River-Hebei environmental complex”, “the less return it gained, and the deeper it sank into a costly dilemma”.¹ Prior to the Republication restoration project, the most recent concerted effort by both Beijing and regional officials to rebuild the Canal had been nearly a hundred years earlier in 1824-1826. The Daoguang emperor (1782-1850) utilized all resources at his disposal to repair the canal system and cooperated closely with local officials to take decisions. Ultimately, officials and merchant grain shippers decided to explore and implement the option of grain transport by sea. Historian Jane Kate Leonard argues that we should not see the forsaking of the Grand Canal for the maritime route as a sign of the Qing state’s failure, but rather of the complex and responsive communications

¹ Ling Zhang, *The River, the Plain, and the State: An Environmental Drama in Northern Song China, 1048-1128* (Cambridge: Cambridge University Press, 2016), pp. 5-6.

between the center and the region; regional and practical considerations were more important than earlier imperial precedent.² Both Zhang and Leonard's analyses of imperial attempts to control the water arteries of the North China plain are instructive about the challenges involved in the allocation of resources and management of expertise between center and localities, and the question of how much to invest before turning away.

The new Republican government embraced the promise of global science and expertise to repair and develop the water infrastructure, in the hope of stimulating socio-economic recovery. Although the collapse of the Qing in 1911 seemed to show the imperial government's loss of heavenly mandate to cope with environmental instability, new Republican leaders did not entirely eschew older paradigms and practices. The river conservancy organizations that had arisen in Tianjin and Shanghai as mandated by the Boxer Protocol of 1901 continued their daily operations through the tumult of the Xinhai revolution.³ The Chihli River Commission (順直水利委員會 Shunzhi shuili weiyuan hui), which was founded in the aftermath of the devastating floods of North China in 1917, borrowed members from the treaty port conservancy boards for its own personnel. In the new Beiyang government, the first (and short-lived) President Yuan Shikai appointed as the first President of the National Water Conservancy Bureau, Zhang Jian (1853-1926), a civil service examination graduate and successful industrialist, whose

² Jane Kate Leonard, *Controlling from Afar: The Daoguang Emperor's Management of the Grand Canal Crisis, 1824-1826* (Ann Arbor: University of Michigan, 1996), p. 250.

³ Shirley Ye, "River Conservancy and State building in Treaty Port China", *The Treaty Port in Modern China*, ed. Robert Bickers and Isabella Jackson (New York: Routledge, 2016), pp. 121-138.

modern educational program in Jiangsu were upheld as a model in the empire-wide educational debates during the Qing's New Reforms.⁴

The proliferation of water conservancy boards at the municipal, regional and national levels was perhaps reflective more of state enthusiasm than of state strength. Historian Prasenjit Duara has argued that the “replication, extension, and elaboration” of new organizations and boards to cope with environmental disaster was symptomatic of one of the ailments of the Republican state: the competition between local society and the central state for control over resources of capital, talent, and labor and simultaneous proliferation of the administrative apparatus at both the local and central levels to assert that control.⁵ The concept of state involution sheds light on the character and process of the new water conservancy boards in the first years of the Republic. The failure of the Grand Canal project reveals not just the inefficiencies of state extraction and deployment of resources, but also the fragilities of international diplomacy in the emerging era of modernization and developmentalism.

The present article is concerned with the global dimensions of the Grand Canal restoration; global networks of expertise enabled the negotiations between the American corporation and the fledgling Chinese state to restore the Grand Canal. Founded in 1915, the American International Corporation (AIC) was led and staffed by American businessmen and engineers who had links to finance, industry, and academia. The mission statement of the AIC was “to encourage engineers and contractors, both American and foreign, to bring such enterprises as they think worthwhile to this

⁴ Qin Shao, *Culturing Modernity: The Nantong Model, 1890-1930* (Stanford: Stanford University Press, 2004).

⁵ Prasenjit Duara, *Culture, Power, and the State: Rural North China, 1900-1942* (Stanford: Stanford University Press, 1991), p.135.

Corporation for consideration” – that is, large-scale projects that required considerable capital, technology, and labor.⁶

The American International Corporation was one of many organizations that attempted to repair the instability on the Grand Canal and its intersecting waterways. This had to do with the broad geographical area covered by the Grand Canal, which crossed with several major waterways including the Yellow River, the Huai River, and the Yangzi River. There was much disparity across these areas. As Kenneth Pomeranz has shown, the area where the Yellow River and Grand Canal intersect in northern Jiangsu and southern Shandong called Huang-Yun, became an economic and political backwater after the 1852-1855 Yellow River floods had devastated the region, rendering that northern portion of the Canal unnavigable. The need for collaboration across the provinces exposed the lack of trust local elites had for those across administrative lines. Pomeranz has examined the role that southwest Shandong gentry based in Jining played in the Grand Canal project’s conception: they had lesser rural presence than elites in eastern and southern China involved in land reclamation and water control, but they nonetheless wished to assert influence in those areas; for them, the navigation of the canal was of least concern. In 1914, they formed the Shandong Grand Canal Board with their office in Jining. Pomeranz traces the growing enthusiasm for the project and then its waning support by Shandong gentry, and attributes the failure of the project to Japan: to appease stockholders and guard against political uncertainty, the AIC insisted on offering the Industrial Bank of Japan a share of the project. However, the AIC’s decision created

⁶ *Bulletin of American International Corporation*, (New York: February 1917), p. 11.

exactly the situation it had tried to avoid as the Chinese government's deep anger at Japan's involvement created uncertainty about the project.⁷

This article examines the professional and governmental networks that the Grand Canal project was embedded in. While narratives of the Grand Canal's imperial inception and history framed understandings of its continuing approaches and uses, its modern repairs were inspired by the recent water conservancy projects in the treaty ports. The Grand Canal Improvement project was intended to join with the Huai River, which had recently flooded to devastating result. David Pietz's research on this episode focused on the efforts of the aforementioned Jiangsu industrialist Zhang Jian in his capacity as President of the All China Water Conservancy Bureau to collaborate with the American Red Cross to provide relief for the flood victims of 1913 and to prevent future flooding. However, due to disagreements between Zhang Jian and his foreign collaborators about financing and method, Pietz argues, the project came to naught.⁸ The first part of my article follows from where Pietz left off and traces how resources from the failed humanitarian action on the Huai River were channeled into the Grand Canal project. For the young Republican government, the First World War was an important turning point for both its management of hydraulics and international relations. In the area of American philanthropic activities both domestically and abroad, the First World War saw an intensification of humanitarian efforts at the juncture of government and private action.⁹ When humanitarian effort seemed insufficient, the Grand Canal project looked to the

⁷ Kenneth L. Pomeranz, *The Making of a Hinterland: State, Society, and Economy in Inland North China, 1853-1937* (Berkeley: University of California Press, 1993), p. 232.

⁸ David Pietz, *Engineering the State: The Huai River and Reconstruction in China, 1927-1937* (New York: Routledge, 2002).

⁹ Olivier Zunz, *Philanthropy in America: A History* (Princeton: Princeton University Press, 2012), pp. 56-57.

river conservancy boards in the treaty ports for management and expertise. Engineers and their teams faced considerable challenges in local society; on the ground, banditry was prevalent, and in politics, provincial leaders were uncertain about the situation across administrative boundaries. The second part of the article, meanwhile, examines the global and cultural dimensions of the project: recruitment and the social consolidation of the professional and official networks.

The impulse behind the project was one part humanitarian, one part corporate with both parts driven by an uncompromised vision of modernity that sought to strengthen China's sovereignty. By examining the Grand Canal Project as part of the legacy of the post-Boxer Protocol treaty port river conservancy organizations, this article traces the transition from imperialism to developmentalism at the juncture of hydrology and state building, and in the process interrogates what modernization meant for Chinese state-builders and American businessmen-engineers.

From Failed Humanitarianism to International Development: The Entry of the American International Corporation

New avenues of humanitarian engagement were opened up by the natural disasters of the late Qing and Republican era. Lillian M. Li has shown the continuities in Qing era famine relief and philanthropy practice into the Republican period and argued that the state was weak in its ability to cope with natural disasters.¹⁰ Although Li is right that the central state was weak, regional elites could be quite dynamic and resilient in

¹⁰ Lillian M. Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s* (Stanford: Stanford University Press, 2007).

how they responded to local emergencies. Even international organizations like the Christian missions and the American Red Cross worked best when collaborating with local officials and power holders. With the active involvement of Chinese officials, traditional forms of philanthropy were reintroduced: work for relief (以工代賑 yigong daizhen), for example, which was the conscription of famine victims for rebuilding dykes and roads was utilized on the Grand Canal.¹¹

The industrialist Zhang Jian, who wanted to transform the textile town Nantong on the northern bank of the Yangzi River as a rival port to Shanghai and as a model town of modernity, had been keen to develop a new and modern hydraulic system for both Nantong and the larger Jiangsu province.¹² Already he had been involved in educational policy debates during the late Qing New Reforms and had a personal hand in establishing new schools and was concurrently in the midst of setting up the first Engineering Conservancy College in Nanjing. In the government formed by Yuan Shikai, Zhang Jian was appointed president of the newly founded National Water Conservancy Bureau in December 1913.

While Zhang Jian looked to western experts for the introduction of new technology in hydraulics, he was skeptical that their methods were appropriate for local environments, and concerned about their high budgets. Zhang appointed the son of the Dutch engineer Johannes De Rijke for the urban water development of Nantong: and again for the national bureau that he now headed, he used a Dutch national, H. van der Veen, as his consulting engineer. Zhang was receptive to international funding sources to

¹¹ Pierre-Etienne Will, *Bureaucracy and Famine in Eighteenth Century China*, Elborg Forster, trans. (Stanford: Stanford University Press, 1990), pp. 258-261.

¹² Shao, pp. 67, 69.

support his hydraulic projects. To raise funds for the recuperation after the Huai River floods, Zhang cooperated with the American Red Cross for conservancy work.¹³ In 1914, engineers from the American Red Cross visited the Huai River. William Sibert, who was supervising engineer on the Panama Canal, was the American-appointed Chief Engineer. Zhang appointed a Dutch engineer F.M. Blom of the Netherlands Harbor Works to review the American survey, and a number of domestically trained Chinese water control technicians in order to promote their experience and development in hydraulic science.¹⁴

Zhang and the American Red Cross had disagreements about both the funding and the planning of the project. The American Red Cross plan rejected Zhang's recommendation that the Huai River should split its discharge between the former Yellow River bed and the Yangzi outlet, which calculated the necessary excavation of the former Yellow River bed and the channel leading to the Yangzi based on the water level of Hongze Lake at 14.5 meters. American Red Cross engineers contradicted Zhang's plan, reporting that to prevent floods immediately surrounding Hongze Lake, the level should not exceed 13 feet and that draining should rely solely on the waterway to the Yangzi to prevent excessive excavation of the former Yellow River bed and channel.¹⁵ Zhang's plan was cheaper than the American one by several million dollars and would take less time. Zhang was aware that the Beiyang Government did not have the finances to fund the Huai improvement. Neither the American Red Cross nor the Chinese government was

¹³ Full text of "Huai River Conservancy Loan Agreement" in *Far Eastern Review* 10:9 (February 1914), p. 370; David Pietz, *Engineering the State*, pp, 31-32.

¹⁴ *Ibid.*, p. 32.

¹⁵ *Ibid.*, pp, 32-33.

able to secure funding for the project. In late 1915, Zhang resigned as Director of the National Water Conservancy Bureau.¹⁶

The failure of a more limited hydraulic project on the Huai River made room for a far more ambitious and far-reaching project to restore the Grand Canal. However, the project would certainly not have started without the initiative of the American International Corporation. Chartered on 22 November 1915 with funds from J.P. Morgan as a mechanism for American investments abroad, the AIC was based at 120 Broadway, close to the financial world of Wall Street. The mission of the new corporation was to fill a gap in the world market for infrastructural development. On 27 November 1915, President of the City National Bank of New York and AIC officer Frank Vanderlip wrote a letter addressing the issues of the day in which he acknowledged the changes brought by the First World War. Vanderlip noted that “new responsibilities and extraordinary opportunities” were being brought to the United States: whether or not she wished it, America as a nation had “to think internationally.” To meet new obligations and conditions, America needed “new corporate instruments” – like the AIC – for that work.¹⁷ In the corporation’s first year, 1,230 projects were presented to AIC: among them, 347 from countries in South America, 256 from Europe, and 73 from Asia.¹⁸ To support the various projects it undertook, the AIC sought to build its own ocean transportation system. Many of its plans called for investment in domestic and overseas enterprises that would be utilized in developing global trade, using American materials, manufactures, capital, and personnel. It is within this global investment program that the

¹⁶ Ibid., p. 34.

¹⁷ *Bulletin of American International Corporation* (New York: February 1917), p. 15.

¹⁸ Ibid., p. 18.

AIC launched the Grand Canal project.¹⁹

The AIC Board of Directors consisted of an illustrious and talented group of accomplished businessmen²⁰ and engineers with connections to MIT: Charles Augustus Stone (1867-1941), the President of AIC, was a graduate of MIT and drew upon his school network to staff the corporation. John Ripley Freeman (1855-1932), class of 1878, was recruited by Stone. Famous for his recent work on the Charles River Dam and possessing wide-ranging experience in American hydraulic projects, Freeman, on behalf of the American International Corporation, headed the Grand Canal project as consulting engineer. Like other American academics, Freeman admired German disciplines of higher learning, and in particular the German school of hydrology. Willard Straight, who had long experience in China, was another partner of the AIC. Earlier he served as an employee of China's Imperial Maritime Customs Service, then a consul-General at Shenyang 瀋陽, and most recently he was associated with J.P. Morgan and Company. Among other roles, Straight was also the Wall Street expert on Asian finance and politics. Straight died young in late 1918 of influenza while he was on the American Mission to the Paris Peace Conference, but his views on China continued to be influential in the AIC policy toward China: namely, that independent foreign investments could best be supported by a strong, independent China.²¹

In China, groups interested in investing in railway and canal construction approached the directors of the AIC with the possibility of “negotiating contracts for the

¹⁹ George T. Mazuzan, “ ‘Our New Gold Goes Adventuring’ : The American International Corporation in China”, *Pacific Historical Interview*, Vol. 43, No. 2 (May 1974): 212-232, on pp. 215-216.

²⁰ *Ibid.*, pp. 214-215.

²¹ *Ibid.*, p. 216.

improvement of the Grand Canal and the construction of various railroad enterprises in China, for which Chinese Government bonds would be issued.”²² In preparation for the negotiations in case the contracts could be secured, two organizations were established in July 1916: the China Corporation and the Siems-Carey Railway & Canal Company.²³ The AIC held the controlling interest in both companies. Siems-Carey Company, a contracting and engineering firm of St. Paul, Minnesota, held the remainder.²⁴

W.F. Carey of Siems-Carey first traveled to China in fall 1915 with E.T. Gregory in order to assess the general situation. In February and March 1916, Gregory and Carey, along with Roy S. Anderson, traveled along the Grand Canal from the Yellow River in Shandong to Zhenjiang in Jiangsu, where the Canal intersected with the Yangzi River. After that trip, Dr. T.J.N. Gatrell, who was employed by the Chinese Government Salt Administration, and was Secretary and Interpreter to the AIC, joined the group. The AIC entered into negotiations with a representative of the Shandong Provincial Government, and on 20 April a contract was signed for dredging the canal in Shandong province.²⁵

At the same time, Carey carried out negotiations with the Ministry of Communications at Beijing for a loan for the building of railroads in China. That preliminary contract was concluded on 17 May 1916.²⁶ According to the preliminary agreement, the AIC would have virtually exclusive control over the lines and operations while Siems-Carey would construct the railroad. AIC would market fifty-year bonds at an

²² *Bulletin of American International Corporation* (New York: February 1917), p. 23.

²³ *Ibid.*, p. 23.

²⁴ *Ibid.*, p. 24.

²⁵ *Ibid.*, p. 27.

²⁶ *Ibid.*, pp. 27-28.

annual interest rate of five percent and Siems-Carey would receive a five-percent commission on the cost of materials and American businesses would be given preference to provide supplies and equipment. Once the railroads were completed, Americans would manage them for the duration of the bonds.²⁷ Carey, along with representatives of the AIC and a group of engineers, left America in July 1916, arriving in China in August.²⁸ The AIC advanced to the Chinese government \$500,000 for surveys and other investigations for railways to be built under the contract.²⁹

Although the Grand Canal Project faced significant challenges resulting from both domestic Chinese politics and international relations, the project nonetheless went through. When Yuan Shikai died in June 1916, a power vacuum opened. A new parliament met on 1 August and the terms of the earlier May preliminary agreement were renegotiated.³⁰ European and Russian governments, protective of their own spheres of influence, queried the railroad portion of the contract. The Huai River conservancy, which had been established earlier in 1914 as a project of the American National Red Cross, ran up against Japan's imperial ambitions in Shandong as expressed in its Twenty-One Demands.³¹ Because the Grand Canal itself ran through both Jiangsu and Shandong provinces, Japan's political and economic influence and ambitions in Shandong raised new problems for American development.³² Despite all of this, the contracts for the projects were approved: according to the 30 August 1917 agreement, the Americans

²⁷ Mazuzan, p. 220.

²⁸ *Bulletin of American International Corporation* (New York: February 1917), p. 24.

²⁹ *Ibid.*, p. 24.

³⁰ Mazuzan, p. 222.

³¹ *Ibid.*, p. 219, 225.

³² *Ibid.*, p. 226.

would manage the project and the Industrial Bank of Japan was included in the financial arrangements in order to help market the securities.³³ By November 1917, however, outside observers such as Harvard Professor of International Law George Grafton Wilson would write in a letter addressed to Freeman: “It seems to me that their [AIC’s] policy in regard to business in the Far East has not shown the same wisdom as elsewhere.”³⁴

A flood disaster on the Huai River and the failure of the American Red Cross to adequately deal with relief and river works opened the way for the American International Corporation to enter with an ambitious proposal for the reconstruction of the whole canal.

³³ Mazuzan, p. 230.

³⁴ MIT: George Wilson to Freeman 19 November 1917 in Folder Selection of Chief Engineer 1/3 . Box 123. MC 51.

Treaty Port Hydraulics as Model for Disaster Relief

In many ways, the Grand Canal Improvement Project was built upon knowledge and expertise connections established in the treaty ports, particularly the Hai River Conservancy of Tianjin and secondarily with the Whangpoo Conservancy Board of Shanghai. Due to its geographical proximity and physical intersection with the Grand Canal, it was the Hai River Conservancy's extended institutional responsibilities that resonated most with the requirements of the new institution. Moreover, contemporaries perceived that the center of China's political power was shifting from Beijing to Tianjin.³⁵ Both the Hai River Conservancy and the Grand Canal Improvement Project had their offices in Tianjin. Shanghai's trade may have been more important for China's overall global trade, but the organizational and financial efficacy of the Hai River Conservancy at Tianjin was perceived by the treaty port community as more effective. For example, the Liao River and Bar Conservancy established in 1911 at Niuzhuang 牛莊 (present-day Yingkou 營口 in Liaoning province) in order to improve the navigation conditions on the Liao River to improve the port's competition against the now Japan-

³⁵ "Present Political Situation in China" in *Millard's Review*, 17 August 1918, p. 457. "The political center of China has been shifted from Peking to Tientsin. Whenever an important issue arises the leading militarists on the other side of the Yangtze River flock to Tientsin for the purpose of thrashing it out. Another conference, for instance, was held at that port last week for consideration of such questions as whether the present civil war should continue, and who shall be the President and who shall be the Vice-President in the election to be held next September, and who shall they support."; Arthur Waldron, *From War to Nationalism: China's Turning Point, 1924-1925*, (Cambridge: Cambridge University Press, 1995), pp. 15-16. Johanna S. Ransmeier, *Sold People: Human Traffickers and Family Life in North China* (Cambridge: Harvard University Press, 2017), p. 214.

controlled port of Dalian, explicitly intended to follow the model of the Hai River Conservancy.³⁶

In September 1917, the Hai River Conservancy, realizing that the navigability to the port of Tianjin depended on the larger water system drainage area outside of its scope of jurisdiction, made appeals through diplomatic channels for the formation of a Joint Commission for the supervision of both navigation and drainage. Shortly after the proposal went forward, disastrous floods hit the area south of Tianjin, affecting some 40,000 square miles of territory and rendering 5 million people homeless. A large portion of the city remained several feet under water during September, October, and November. The Chinese government and the Diplomatic Body at Beijing formed a new organization for the Chihli river system, the most important being the Directorate General of Flood Relief and Conservancy under Xiong Xiling 熊希齡 (1870-1937).³⁷

Xiong Xiling was an important philanthropist during the Republican era. Involved in educational reforms during the last decade of the Qing, Xiong held a number of regional positions in Manchuria and Hubei. While he is perhaps most famous for establishing the orphanage in the Fragrant Hills of Beijing which was an important model for the first modern kindergartens in China, his earlier brief tenure as the President of the Chihli River Commission shows how disaster relief and philanthropy by government and

³⁶ Liaoning Provincial Archive: JC10-1-4068; Dr Bunkichi Okazaki, 'Records of the Upper Liao River Conservancy Works', p. 11. PKU; PAAA: Peking II-1402.

³⁷ BMA: J007-004-00054; MIT: Public Statement Commission for the Improvement of the River System of Chihli No. 1, Tianjn, Folder Chihli River Commission – 1918-1922. MIT: John Ripley Freeman papers. Box 124. MC 51.

private actors overlapped and intersected during this time.³⁸ One of the first tasks of the Chihli River Commission was to investigate the causes of the disastrous 1917 flood. The report by C.W. Cley recognized the direct links between the collapse of state order and ensuing rapid environmental changes. Both the area north of Beijing and southeast Shanxi, formerly a mountain chain of “formidable forests”, had been completely destroyed in the last thirty years by settler colonization. The excessive extraction of timber caused the flood.³⁹

³⁸ Margaret Mih Tillman, *Raising China's Revolutionaries: Modernizing Childhood for Cosmopolitan Nationalists and Liberated Comrades, 1920s-1950s* (New York: Columbia University Press, 2018), p. 75.

³⁹ C.W. Cley, “Report to His Excellency Hsiung Hsi Ling, Director General of Flood Relief and Conservancy,” Tientsin, 1917. PKU.



Figure 1

Four photographs from top left to right bottom. 1) One of the valleys of the Wuling-Shan as seen in 1916. 2) The same valley as it appeared in 1917. 3) and 4) Two pictures taken in 1000 meters altitude, showing that the forest destruction is carried to the very tops of the mountains; observe the size of the house in comparison to the trees.

Source: C.W. Cley, "Report to His Excellency Hsiung Hsi Ling, Director General of Flood Relief and Conservancy," Tianjin, 1917. PKU.

Devolving state control in the aftermath of the Qing's collapse contributed to the rapid deforestation of the area. In the first two years of the Republic, according to Cley, the older imperial prohibitions against woodcutting were no longer enforced; the people who lived on the outskirts of the forest started to cut the timber in their area, and others "went into the interior of the forest and started to colonize the valleys." Only at that juncture did authorities in Tianjin and Beijing start to exercise more authority and attempt to halt the woodcutting in the district.⁴⁰

The new Chinese government in Beijing wanted "a radical remedy of conditions" to be effectively implemented with modern engineering knowledge. The original proposal by the Hai River Commission was thus used as the base for the new organization, and the Commission for the Improvement of the River System of Chihli (also called the Chihli River Commission) was established.⁴¹ The rivers that the Commission was concerned with were: Chao Pei Ho 潮北河 (Chaobei River), Yung Ting Ho (Yongding River) 永定河, Ta Ching Ho 大清河 (Daqing River), Hu To Ho 滹沱河 (Hutuo River, and Nan Yun Ho (the southern Grand Canal) 南運河.⁴²

⁴⁰ C.W. Cley, "Report to His Excellency Hsiung Hsi Ling, Director General of Flood Relief and Conservancy," Tientsin, 1917. PKU.

⁴¹ MIT: Public Statement Commission for the Improvement of the River System of Chihli No. 1, Tianjin, Folder Chihli River Commission – 1918-1922. John Ripley Freeman papers. Box 124. MC 51.

⁴² Minutes of the Inaugural Meeting of the Commission for the Improvement of the River System of Chihli held at the Directorate General of Flood Relief and Conservancy on 20 March 1918, *The Commission for the Improvement of the River System of Chihli: Proceedings of the Commission*, Volume 1 (Tientsin: 1918), p. 23. PKU.



Fig. 21.

Figure 2
River System of Chihli
John R. Freeman, "Flood Problems in China" in *Transactions of the American Society of Civil Engineers*, (1922), p. 1455.

The first four of those rivers had upland collecting basins in the mountains to the west of the southern part of Zhili province, future Hebei province, and Shanxi province, while the Grand Canal has connected with the Yellow River and received the waters of the Wei and Yunliang Rivers. Carrying fine silt, but no sand, the waters-collecting areas varied, with the Hun River having the largest collecting area. Because the Hun River had no adequate outlet, it also brought down an enormous quantity of silt, which emptied into

the land north of Tianjin. The silting of the Hai River occurred when that silt from the Hun River reached the Hai River, thus resulting in the closing of Tianjin port to deep draught steam vessels. The following circumstances, then, together contributed to the recurrent cycle of drought and flood: 1) unequal distribution of the rainfall throughout the year. 2) barrenness of the hills denuded of trees and turfs. When there was rainfall, then, water run-off would be rapid, causing erosion and rushing down the slopes carrying enormous quantities of sand and silt. 3) Inadequacy of outlets to the sea.⁴³

Table 1

River	Upland Collecting Area Square Miles	Lowland Area Square Miles	Total Square Miles
Peiho	8,800	700	9,500
Hunho	19,000	1,300	20,300
Tach'ing ho	8,700	3,400	12,100
Hsiahsiho (P'ut'acho, Shihho)	10,900	6,350	17,250
Yunho / Grand Canal (Yunliangho, Weiho)	13,800	6,400	20,200
Total	61,200	18,150	79,350

J.B. Taylor, "An appeal for a Chihli Conservancy Board," *Chihli Conservancy League No. 1*, Tientsin Press, not dated. PKU.

⁴³ J.B. Taylor, "An appeal for a Chihli Conservancy Board," *Chihli Conservancy League No. 1*, Tientsin Press, not dated. PKU.



Figure 3

Source: 永定河歷代變遷圖圖說, [Yongding River Historical Changes Map], n.d., PKU.

The disaster provided an opportunity for new state-building and institutions. Planning for the scientific and administrative implementation necessitated the cooperation of several bodies and interest groups including: Board of Agriculture and Commerce, Governor of Chihli, Consulting Engineer of the National Conservancy Bureau, Board of Communications, Tientsin Chamber of Commerce and Tientsin General Chamber of Commerce, Hai River Conservancy Commission, Provincial Assembly, Gentry of the Province, and lastly Shipping Companies.⁴⁴ In early 1918, the Chinese government appointed a commission made up of two groups of appointees. The first was selected by the Diplomatic Body and the second by the Chinese Government. The first group consisted of Heidenstam, the Swedish Chief Engineer of the Whangpoo Conservancy Board and Pincioni, the Italian Chief Engineer of the Hai Ho Conservancy, as well as Captain W.F. Tyler, the Coast Inspector of the Maritime Customs of Shanghai had who had written on the Yellow River. The Chinese government-appointed group consisted of Yang Baoling 楊豹靈⁴⁵, the chief technical expert of the National

⁴⁴ J.B. Taylor, "An appeal for a Chihli Conservancy Board," *Chihli Conservancy League No. 1*, Tientsin Press, not dated. PKU.

⁴⁵ Yang Baoling (1886-1966), Jiangsu province, Jinshan native. Attended Shanghai East-West Academy and graduated from Suzhou Dongwu University. In 1907, he went to America to study Engineering at Purdue University. He returned to America in 1911 and was appointed by the Ministry of Foreign Affairs to go to Wuchang. In 1912, he was appointed to survey the Huai River and the Grand Canal. In 1913, he was head of the Civil Engineering department of the Hunan Higher Technical School. In 1914, he was appointed head of the National Water Conservancy Bureau. After 1917, he was also appointed to the Yangzi River Committee, the Tianjin Electricity Head and the Zhihli Province Rivers Survey Committee, and the Chihli River Commission. After 1928, he resided in Tianjin and managed the Dachang Company, dealt with foreign factories, import of machinery and was responsible for construction projects, and was active in managing relations between the Chinese and foreign concessions in Tianjin municipality. After 1936, he left the Tianjin Public Works Committee. After the Second World War, he was appointed to the Tianjin Municipal Affairs. *Tianjin jindai renwulu* 天津近代人物录, pp. 146-147.

Conservancy Bureau, Mr. van der Veen, a Dutch Engineer, then advisor to the National Conservancy Board and Wu Yulin 吳毓麟⁴⁶ representative of the Chihli Provincial Government and the Taku Naval Dockyard.⁴⁷

Soon after the Chihli River Commission was formed to start the collection of hydraulic data, the President of the Chihli River Commission Xiong Xiling 熊希齡⁴⁸ conferred upon the organization administrative functions including financial expenditure and engineering works administration. The first meeting of the Commission was on 20 March 1918. Xiong Xiling gave a speech at this first meeting in which he rhetorically asked whether the Grand Canal was “one of China’s greatest public works” as well as the “greatest mistake” in “allowing artificial structures to interfere with the natural tendencies of rivers.”⁴⁹ President Xiong deplored the traditional, un-scientific methods of water control. Although Xiong acknowledged that the Grand Canal might be considered a

⁴⁶ Wu Yulin (1869-1944), also known as Admiral Y.L. Woo in English language documents, was a native of Anhui, graduated from Beiyang Naval School in 1892, studied abroad in Germany at the Friedrich Krupp Germaniawerft (浮尔底造船廠 Fuerdi zhaochuanchang). In 1913, he was appointed head of the Dagu Naval Dock Yard and in 1921 was given the post as Director General of the Eastern Metropolitan Conservancy Works. In 1922, he was appointed managing director of the Tientsin-Pukow Railway. *Who’s Who in China*, (Shanghai: The China Weekly Review, 1929), pp. 889-890.

⁴⁷ MIT: “Surveys by Chihli Flood Relief Commission and Shantung Conservancy Bureau,” 19 February 1919 in John Ripley Freeman Papers, 1827-1952. Box 123, MC 51.

⁴⁸ Xiong Xiling (1870-1937) was a native of Hunan province. He was a jinshi in 1894 and a Hanlin scholar. He was a friend of Kang Youwei and briefly arrested by the Qing court during the fall out of the 100 Days Reform. He studied abroad in Japan. In 1905, he returned to China and participated in Duan Fang’s foreign mission to the United States and Europe. *Who’s Who in China*, (Shanghai: The China Weekly Review, 1929), pp. 311-313.

⁴⁹ MIT: Extract from Minutes of the Inaugural Meeting of the Commission for the Improvement of the River System of Chihli held on the 20 March 1918 I Folder Chihli River Commission – 1918-1920. John Ripley Freeman Papers, 1827-1952. Box 123. MC 51.

great engineering work, he noted that the project did not make use of “scientific engineering” and that the more than ten overflow channels instead of rendering “permanent service” offered instead merely a temporary service that needed to be continuously maintained. The meeting acknowledged that the Zhili River system was related to the Grand Canal construction, from an earlier thirteenth-century river engineering project when all of the rivers northward of the Yellow River were led to discharge their water into the Hai River. It was supposed that parts of the plain were used as flood reservoirs and silt depositing basins and the constriction of the exits into the Hai River would not greatly exceed that channel’s maximum carrying capacity.⁵⁰

The hydraulic management of the treaty port river conservancy boards provided a template for the Grand Canal organization. In particular, the Hai River Conservancy was held up as a model for the Chihli River Commission, which was formed in 1917; both the Hai River Conservancy and Chihli River Commission had their offices in Tianjin and both shared administrative and engineering personnel. This was due in large part to the shared geographic burden both commissions had; any disruption on the Yellow River was felt in future Hebei as well as Tianjin.

Engineers, Cooperation with Government

As William C. Kirby has argued, foreign relations in the Republican era were “all prevailing”: all events of importance had an international dimension.⁵¹ The

⁵⁰ MIT: Public Statement Commission for the Improvement of the River System of Chihli No. 1, Tianjn, Folder Chihli River Commission – 1918-1922. John Ripley Freeman Papers, 1827-1952. Box 124. MC 51.

⁵¹ William C. Kirby, “The Internationalization of China: Foreign Relations at Home and Abroad in the Republican Era”, *The China Quarterly*, no. 150, Special Issue: Reappraising Republican China (June 1997): 433, 433-458.

internationalization of China's hydraulics is perhaps most evident in the careers of the engineers who worked on the project. Their educational and professional careers anchored them in the global science of civil engineering, which was just then emerging. John Ripley Freeman was the American head of the project and already in his 60s, yet he was still described by his younger American colleague Oliver J. Todd as "tireless in his expenditure of mental and physical energy."⁵² Freeman had established his fame with a number of notable hydraulic projects in the United States, including the Charles River Dam. He had academic ties with other notable hydraulic engineers such as Hubert Engels of Germany.

Freeman visited China for the first time in January 1917, equipped with letters of introductions with which to make the acquaintance of various engineers and statesmen. Freeman visited a young Chinese engineer in Shanghai who was connected with the Whangpoo Conservancy work and a fellow student with one of Freeman's sons at MIT, who prepared for Freeman a brief bibliography regarding the flood and river problems of China. In Guangzhou, Freeman made contact with the President Edmunds of Canton Christian College and both the engineer, Capt. Olivecroner, and the Director General, Admiral Tan, of the West River Conservancy at Guangzhou.

The three Chinese officials related to water conservancy Freeman had the most interactions with were Xiong Xiling of Zhili province, Zhang Jian of Jiangsu province, and Pan Fu 潘復 (1883-1936) of Shandong province. In Beijing early January 1917, Freeman met Pan Fu who was Director of the Shandong Conservancy Commission, which had made extensive surveys of the waterways. Yang Baoling, the chief technical

⁵² Oliver J. Todd, *The China That I Knew* (Palo Alto, private publication, 1973), p. 10.

expert for the National Conservancy Bureau, was the interpreter for Pan Fu and Freeman. Highly regarded in Chinese government circles and by Freeman, Yang was, as a graduate of Purdue University, a bridge between the worlds of American engineering and Chinese officialdom.⁵³

On the voyage from Shanghai to Hong Kong in February 1917, Freeman traveled with twenty-five medical missionaries from all over China and Manchuria and now on their way to a Health Service Convention at Guangzhou, and five or six engineers of the Siems-Carey Railway & Canal Company who were on their way to conduct railway reconnaissance northwest of Guangzhou. Aboard the ship, Freeman was asked to give a lecture on the flood relief problems in China, which elicited discussion from the missionaries, who shared “what they had seen of flood and famine some years previously in the region traversed by the Canal, and in view of having several young Chinese engineers in my audience, I sought to awaken in them thoughts of the practicability of controlling these floods in some small part at least, and briefly outline in unmathematical terms the theory of silt deposits and the methods of compelling a river to transport its burden of silt to the sea.”⁵⁴ Although missionaries had a higher profile than engineers in China in the disaster relief, Freeman in his role as an engineer and business representative of the AIC was able to instruct this particular group of missionaries and young Chinese engineers about the mechanics of water flows and control.

The new Chinese government and the American International Corporation signed

⁵³ MIT: “Progress Report” 19 February 1919. Folder Working Files, 1917-1919 2/2. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

⁵⁴ MIT: “Progress Report: China Grand Canal Investigations to December 31, 1918” in John Ripley Freeman Papers, 1827-1952. John Ripley Freeman Papers, 1827-1952. Box 123, MC 51.

an agreement on 20 November 1917 with the Director General of Flood Relief and Conservancy Xiong Xiling, and W.F. Carey who represented the American International Corporation. The agreement was titled the “Chinese Government Grand Canal Improvement 7% Gold Loan of 1917” and sought to deal with the problems resulting from the Yellow River’s change of course in 1852, which changed the direction of flood flow and drainage of rivers in the vicinity of the Grand Canal in the west part of Shandong province. Moreover, long reaches of the Canal became filled with silt from rivers entering or crossing it. For these reasons, the Canal was largely inoperative in Shandong province as well as over long distances in Zhihli province.⁵⁵

Freeman drew on his experiences and textbook knowledge of river systems in America and around the world to consider comparatively the problems of the Yellow River. On 8 November he wrote to the geologist Henry M. Eakin of the U.S. Geological Survey for further information on a particular citation in his essay “Physiographic Principles Manifest in the History of Attempted Control of Yellow and Mississippi Rivers.”⁵⁶ However, he was also mindful that each river had its own peculiarities, citing the example of John A. Ockerson who, in his regulation of the Colorado River, tried to duplicate the methods he used in his thirty years’ experience on the Mississippi River. The result was disastrous: in the course of two years, a millions dollars’ worth of work was destroyed by the currents. The lesson, given to him as professional lore by another

⁵⁵ MIT: John Ripley Freeman Papers, 1827-1952. Box 123, MC 51.

⁵⁶ The essay by Henry M. Eakin was in the September-October issue of *Professional Memoirs* (1916). Freeman was interested in the citation on page 653: “Effect of Levees on the Flow of Sedimentation in Rivers” by Col. C. McD. Townsend and an article “The Huai River Conservancy Project,” pages 113-120 of *Professional Memoirs*, Vol. 7, 1915. MIT: Freeman to Henry M. Eakin, 8 November 1917, in Folder Selection of Chief Engineer 1/3. John Ripley Freeman Papers, 1827-1952. Box 123, MC 51.

engineer at a summer meeting some years previously, was that “each river was a law unto itself and that Ockerson’s experience on the Mississippi simply misled him in dealing with the Colorado.” For Freeman personally, “it has been chiefly an illustration of the undeveloped state of river science.”⁵⁷

The recruitment of professional staff for the project was drawn from an international pool of applicants, but limited by the ongoing world war. Finding suitable staff for the project was challenging, as it came at a particularly strained time on American resources and talent just after America’s entry in the First World War. For a time, Freeman considered appointing his son, but his son wanted to go to France to contribute to the war effort there. Many meetings were held between the Vice Presidents of the AIC and Freeman concerning the selection process and in the end, several graduates of University of Michigan were chosen.⁵⁸ The engineers selected by the AIC were then recommended to the Chinese government, who in turn confirmed the appointments.⁵⁹ In addition to the American engineers, there were appointed ten Chinese engineers of various classes, 5 recorders, 3 draftsmen, 14 rodmen, 17 boatmen, 10 gage

⁵⁷ MIT: Freeman to Philip W. Henry, 20 November 1917 in Folder Selection of Chief Engineer 1/3. John Ripley Freeman Papers, 1827-1952. Box 123. MC51.

⁵⁸ Joseph Ripley (University of Michigan, class of 1876) was chosen as the Chief Engineer, James Wallace Beardsley (Cornell University graduate as the Assistant Chief Engineer, Robert H. Merrill (University of Michigan, class of 1902) as the Principal Engineering Assistant, R.D. Goodrich (University of Michigan, class of 1903) as the Chief Hydrographer, Howard B. Merrick (Asst. Professor, University of Michigan) as the Principal Assistant, and H. Brodie (University of Michigan, class of 1907) and C.O. Carey (University of Michigan, class of 1906). MIT: John R. Freeman Progress Report on the Grand Canal Surveys, 19 February 1919. Folder Working Files, 1917-1919 2/2. John Ripley Freeman Papers, 1827-1952. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

⁵⁹ MIT: John R. Freeman Progress Report on the Grand Canal Surveys, 19 February 1919. Folder Working Files, 1917-1919 2/2. John Ripley Freeman Papers, 1827-1952. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

observers, 6 cooks, 20 laborers and guards – “as many as determined necessary by the Chinese officials.” The Chinese staff was approved at the end of October 1918 and included office engineering assistants at Tianjin and Jining, and the administrative staff of the Director General and associate Director General and the auditing department.⁶⁰

The recruitment and appointment of Chinese engineers showed Freeman’s positive evaluation of Chinese talent and training. In his correspondence, Freeman noted the differences in education and training and compensation between American and Chinese engineers: the salaries based on grades and rate of pay established by the Chihli River Commission were higher than the graduates of the best technical schools in the United States. This could be explained by the “traditional tendency in this country [United States] to compensate young engineers with experience rather than cash, and that in China the policy of the Government appears to be to make the engineering profession attractive to young men of promise.” Because in recent years many Chinese had gone overseas to Europe and to America for technical education, there were at the present moment “more engineers than openings.” Freeman praised the quality of education among Chinese engineering students: they had “brilliant records in our best American technical schools, and I expect the corps as finally organized will do excellent work as soon as trained to our practical field methods.”⁶¹

During the search for engineers to staff the project, a research project was carried on in American libraries under the supervision of Professor Hardy Cross of Brown

⁶⁰ MIT: John R. Freeman Progress Report on the Grand Canal Surveys, 19 February 1919. Folder Working Files 1917-1919 2/2. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

⁶¹ MIT: John R. Freeman Progress Report on the Grand Canal Surveys, 19 February 1919. Folder Working Files 1917-1919 2/2. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

University: the resources at the Libraries of Congress, Harvard University, the American Asiatic Society, the New York Public Library, and the Corthell Engineering Library at Brown University were tapped. Abstracts were written up on the Yellow River floods, outlining how a river in flood could be controlled and made to carry silt to the sea year-round. The painstaking library work took more than 100 full workdays and the result was a typewritten 1200-page report bound in two volumes. There were three copies of the report: Freeman had the original copy; a duplicate was taken to China for study on the voyage, and a third was lost in transmission.⁶²

On 1 May 1918, an agreement between China, represented by Wellington Koo 顧維鈞 (1887-1985), the Minister to the United States, and the AIC represented by Charles Stone was finalized. The agreement was a loan for \$250,000 in gold to conduct preliminary survey work for the Grand Canal Project.⁶³ In July, seven American engineers departed for China, arriving on 4 September for work on the Grand Canal Preliminary Survey. Between 4 and 22 September, they traveled by houseboat through Shandong and Jiangsu provinces touring the Grand Canal.⁶⁴ In addition to the seven American engineers, there were also twenty-five Chinese assistant engineers, draftsmen and cadet engineers engaged in the survey of about seventy-five miles of the alignment in Chihli province immediately north of the Yellow River. River gaugings were established along the streams tributary to the canal in Chihli province and hydrographic

⁶² MIT: John R. Freeman Progress Report on the Grand Canal Surveys, 19 February 1919. Folder Working Files 1917-1919 2/2. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

⁶³ MIT: Folder "Correspondence, Contracts relating to Agreement 1918-1920" 2/2 in John Ripley Freeman Papers, 1827-1952. Box 123, MC 51.

⁶⁴ MIT: "Auditor's Expense Accounts 1918-1919" in John Ripley Freeman Papers, 1827-1952. Box 123, MC 51.

reconnaissance began in Shandong province, and they used the data that was accumulated during 1915 and 1916 from the National Conservancy Board in Shandong.

Chinese officials accused the United States of being discriminatory on the question of expenditures and loans to China. Still, the AIC was optimistic about its opportunities in China: “After making allowance for an unduly large percentage of a loan which Chinese officials may sequester for services rendered in placing the loan, it is true that the time is now opportune for America and Americans to obtain an influence in China, which it will be impossible to obtain a year or so after the war is over.”⁶⁵

There was also the problem of finding suitable staff. The selection of Chinese engineers to fill vacancies was time-consuming. A number of the engineer applicants for employment refused offer for employment on the Grand Canal Improvement Scheme, on the grounds that “the compensation and classification offered was less than the decliner had received while employed on various railroad surveys.” Ripley, the Chief Engineer, attributed this to the Chinese tendency to fear “loss of face.”⁶⁶ Eventually, they had to go deeper into the applicant pool to fill those posts.⁶⁷ A further thirty experienced survey laborers were also hired.⁶⁸

There was a high demand for Western staff. R.D. Goodrich, who had been hired by the AIC for the Grand Canal Improvement Scheme, was sought-after as engineer for

⁶⁵ MIT: Ripley to Freeman, 2 November 1918 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1 /2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁶⁶ MIT: Ripley to Freeman, 18 November 1918 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1 /2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁶⁷ MIT: Ripley to Xiong Xiling, 2 December 1918 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1 /2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁶⁸ MIT: Ripley to Freeman, 25 November 1918 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1 /2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

the Chihli River Commission. In January 1919, Captain W.F. Tyler and Heidenstam of the Whangpoo Conservancy Board approached Ripley about whether or not he could spare Goodrich. Ripley was willing to consider the request if he received a formal letter from Xiong Xiling and if there was another American engineer who could take Goodrich's place.⁶⁹ Ripley thought that Goodrich's transfer as Chief Engineer of the Chihli River Commission would contribute to more effective cooperation between the two organizations, and therefore gave his approval.⁷⁰

Dissent Against the Grand Canal Project

Despite both international and domestic support, the Grand Canal Project faced considerable obstacles that had to do with the varied regional politics and distrust among local political actors. Unlike the treaty port river conservancy boards, whose area of administrative and infrastructural activity was limited within municipal boundaries, the Grand Canal crossed the administrative borders of several significant provinces. Where there was most contention, however, was between the two provinces of Shandong and Jiangsu.

Social unrest seemed endemic in particular around the areas that had been directly affected by the natural disasters of recent decades. As historians Ma Junya and R.G. Tiedemann have noted, adverse environmental conditions contributed to the chronic

⁶⁹ MIT: Young to Freeman, 13 January 1919 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1/ 2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁷⁰ MIT: Ripley to Freeman, 12 January 1919 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1/ 2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51. Freeman himself was dissatisfied with Ripley's reports: his handwritten notes of "careless language" and "queer attitudde" are scrawled in the margins of the reports received from Ripley.

banditry on the Huaibei Plain. As Tiedemann writes, the discontinuation of grain shipments on the Grand Canal in 1901 “transformed the Anqingbang (or Zaibang, a ramification of the Green Gang in northern Jiangsu and southern Shandong) from a functional association of canal boatmen into rural predatory organizations little different from bandit gangs”.⁷¹

In Shandong droves of bandits were roving around the Grand Canal; they robbed villages and kidnapped people for ransom. Military cooperation was necessary to ensure the safety of the engineering survey groups. Soldiers numbering from 30 to 150 were assigned to protect the field parties. Although it was the soldiers’ duty to protect the field parties, the soldiers themselves professed to be unwilling to work near the bandits.⁷² Nonetheless, they treated the bandits with their own brand of violence. “At Yenchowfu the junction station about 20 miles north of here, we saw the heads of 16 bandits hanging in the trees in front of the depot.” The soldiers who had accompanied the survey group house boats up the canal last month had captured three bandit chiefs, who were executed at the same spot. One of those bandits had a “published reward for his head.”⁷³ The “prevalence of bandits in the regions surveyed” entailed unexpected delays and expense

⁷¹ Ma Junya 馬俊亞, *Quyushehuifazhan yu shehuichongtu bijiaoyanjiu: yi Jiangnan Huaibei wei zhongxin, 1680-1949 區域社會發展與社會衝突比較研究：以江南淮北為中心, 1680-1949* (Nanjing: Nanjing University Publishers, 2014), p. 251; R.G.

Tiedemann, “The Persistence of Banditry: Incidents in Border Districts of the North China Plain”, *Modern China*, Vol. 8, No. 4 (October 1982), p. 416, pp. 395-433.

⁷² MIT: John Ripley Freeman Papers. Report of the Preliminary Surveys for the Improvement of the Grand Canal in the Province of Zhihli and Shantung, January 1921, Volume II. MC 51 Box 127. Folder 101.

⁷³ MIT: Ripley to Freeman, 12 January 1919 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1/ 2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

for military protection, which was not provided for in the original budget.⁷⁴ Xiong Xiling arranged to have 500 soldiers detailed for military protection for the engineering parties working north of the Yellow River.⁷⁵

There was also social dissent against the water works. Both the Chihli River Commission and Hai River Commission relied on the cooperation, local insights, and muscle of local power players. One such person was Zhili and Tianjin Police Chief, General Yang Yide 楊以德.⁷⁶ A Tianjin native who descended from a family of salt merchants in Shandong, Yang began his career working as police reconnaissance at the east train station of Tianjin, where he came to know North Tianjin's Police General Cao Jiexiang 曹家祥 (1864-?). After a series of quick promotions, Yang was made Police Daotai of Beiyang in 1909 and later Yuan Shikai bestowed him the title of Major General for loyal service. In October 1918, he was briefly removed from his posts in the Zhili and

⁷⁴ MIT: John Ripley Freeman to Charles A. Stone, American International Corporation, "Brief Progress Report on China Canal Surveys," 20 February 1919. John Ripley Freeman Papers, 1827-1952. Box 123. MC 51.

⁷⁵ MIT: Ripley to Freeman, 1 November 1918 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1 /2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁷⁶ Yang Yide (1873-1944) was appointed inspector of Jing-Yu 京榆 train line (the stretch between Tangshan 唐山 and Shanhaiguan 山海關) in 1906. In 1908, he was appointed inspector of the Tianjin-Beijing telephone lines. In 1909, he was appointed Police Daotai of Beiyang. In 1910, Yang was made Koubei Daotai, but soon after his appointment returned to Tianjin at the bequest of the Chihli governor Chen Kuilong 陳夔龍, where he was under the command of Yuan Shikai. Upon rights-recovery, Yang was made department chief of the ex-Austrian and ex-German concession areas. For a more detailed biography see *Tianjin wenshi ziliao xuanji* 天津文史资料选辑, ed. by Zhongguo renmin zhengzhi xieshanghuiyi tianjin shi weiyuan hui, wenshi ziliao yanjiu weiyuan hui 中国人民政治协商会, 文史资料研究委员会编 (Tianjin: Tianjin remin chubanshe, 1979), pp. 54-65.

Tianjin Police for his “pro-German attitude”⁷⁷ but was reinstated in July 1919. In local Tianjin history, Yang is perhaps best known for his forceful repression of students during the May Fourth Movement.⁷⁸

Yang was crucial to implementing the projects planned by the Hai River Commission and Chihli River Commission. The Chihli River Commission had decided on making a Cathedral Cutting. Initially, they had decided to let there be open tenders for the job and at the 18 April 1918 meeting drafted up an advertisement to invite tenders for the “excavation by manual labor of approximately 50,000 fang of earth.” Tenders were to be received by the Chihli River Commission within twelve days, by 30 April 1918. At the same meeting a report from General Yang and the Chief of the Conservancy Bureau Shih Hsi-chang was received, in which they offered to complete the work for \$287,002,491.⁷⁹ Since the expropriation of the area of the Cathedral Cutting was in the hands of General Yang, it was soon clear to the Chihli River Commission that the most expedient way for making the cut was to let General Yang take responsibility. Soon after General Yang’s offer was received, local gentry addressed a letter to the Chihli River Commission, stating that they wished to undertake all financial responsibility for the Cathedral Cutting, so that work would be done with funds other than those released by foreign banks. The Chihli River Commission expressed agreement in wishing to

⁷⁷ Sir J. Jordan, British Legation, Peking to Foreign Office, September 18, 1919, summary for the quarter ending June 30th, 1919, reprinted in *China Political Reports 1911-1960*, vol. one, ed. by Robert L. Jarman (Britain: Archive Editions Limited, 2001), p. 217.

⁷⁸ See biographical entry in *Tianjin jindairenwulu* 天津近代人物錄, ed. by Zhongguo renmin zhengzhi xieshanghuiyi tianjinshi weiyuanhui wenshiziliao yanjiuwei yuanhui bian (Tianjin: 1987), pp. 140-141.

⁷⁹ “The Commission for the Improvement of the River System of Chihli: proceedings of the commission, volume I”, p. 51.

cooperate with the gentry, but emphasized that the work should be done in accordance with “the plans and understandings reached between the Ministry of Foreign Affairs and the Diplomatic Body.”⁸⁰ Later on, Wang Yao Ting, the contractor for the Cathedral Cutting on the Hai River, was also awarded the contract for the masonry construction for the sluice gates of the Ma-Chang Canal Flood Overflow Channel from the South Grand Canal, located about 25 miles south of Tianjin.⁸¹

The next project was the construction of the South Dyke. The foreign community at Tianjin urged the construction of a dyke and was willing to fund the work. Threat of a recurrence of the 1917 flood loomed large.⁸² Yet, there was strong popular opposition to the proposed location of the dike, and deliberations over whether a new dike should be constructed on the plain or the Tientsin-Pukow line railway embankment were intense.⁸³ General Yang Yide maintained that to construct a dike on the plain would entail “endless troubles with the country people, who would protest against their lands being excluded by the dyke.” Graveyards dotted the area and the cost of expropriation would be high. Using the railroad embankment, on the other hand, would preclude such objections.⁸⁴

However, building the dike on the Tientsin-Pukow railway embankment was not without difficulties either. The Chief Engineer of the Tientsin-Pukow railway objected to building an additional dike alongside the existing railway, giving several reasons. First, the railway administration could not “allow an outside body to have an interest in or

⁸⁰ “The Commission for the Improvement of the River System of Chihli: proceedings of the commission, volume I”, p. 61.

⁸¹ “Bids on Masonry Construction Ma-Chang Canal”, *JACAE* (May 1921), p. 30.

⁸² BMA: J7-4-54. “Dyke Round Tientsin,” p. 181.

⁸³ BMA: J7-4-54. “Dyke Round Tientsin,” p. 182.

⁸⁴ BMA: J7-4-54. “Dyke Round Tientsin,” p. 176.

partial control of the railway embankment.” Second, having “water standing against it and rising to or above the rail level” would damage the embankment. The engineer recommended then building a dike on the south of the railway, since that would protect the existing the railway line. Though it would be expensive, the Railway Administration would be willing to pay part of the cost.⁸⁵

The cost of constructing an entirely new dike outside and south of the railway embankment was considerably greater than simply building a dike alongside the existing railway. For the former, the cost was \$96,184 and for the latter, it was \$34,260. In addressing the Railway Administration, the CIRC asserted it had no interest in interfering with control over the railway embankment, and asked if they would be willing to supplement the nearly \$60,000 in difference. Yet, cost was not the only object. Again, land needed to be expropriated, and since there were graves on the land, its owners refused to sell.⁸⁶

The repression of social dissent and maneuvering around local, logistical obstacles by Yang Yide to paved the way for infrastructure projects by the Chihli River Commission and Hai River Commission. Dissent against the Grand Canal water works among provincial elites proved, however, to be more enduring and challenging for the furthering of the project. In Shandong, the root of the conflict seemed to be over whether the Grand Canal office at Jining 濟寧, Shandong would be kept open or not. Involved in that struggle was the allocation of resources. Jiangsu gentry were simply not interested in sharing responsibilities with Shandong, which they viewed as politically compromised by

⁸⁵ BMA: J7-4-54. “Dyke Round Tientsin,” p. 202.

⁸⁶ BMA: J7-4-54. “Dyke Round Tientsin, p. 205.

the Japanese occupation.

The American International Corporation wanted to have the office for the Grand Canal Project at Jining in Shandong closed.⁸⁷ However, Pan Fu and the Shandong gentry insisted on keeping the Jining branch office open, and incorporating it “as an integral part into any Canal conservancy scheme.” Paul Reinsch, the American Minister to Beijing, relayed the thoughts of Pan Fu to the Chief Engineer Joseph Ripley. According to Reinsch, Pan Fu based his argument on the popular and official sentiment in Shandong: the conservancy of the Canal affected the province as a whole and if the Head Office could not be maintained in Shandong, then at least the Branch Office should be located in Jining. A conference held in Tianjin on 5 and 6 September 1918 exposed the high tensions between the AIC on one hand, and Pan Fu on the other: “the question of including all the expenses of the Siems-Carey head office, in the expenditures upon which was to be calculated the stipulated 10% remuneration, was forcefully argued.” After that meeting, both Xiong Xiling and Pan Fu “lost interest in the Grand Canal Improvement projects and have become pessimistic as to the intention of the Americans to actually perform any construction work.”⁸⁸ Furthermore, “the Provincial Assembly of Shantung and the gentry who have supported the office would resent its abandonment, feeling, quite naturally, that this would render completely futile work on which they had expended time and money.” Not to incorporate the Jining Office, then, would also in effect be “to antagonize those elements most interested in the success of the project in

⁸⁷ MIT: Young to Freeman, 13 January 1919 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1/ 2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁸⁸ MIT: Ripley to Freeman, 2 November 1918 in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1 /2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

hand.”⁸⁹

On 2 January 1919 Xiong Xiling left for Nanjing to discuss with Jiangsu authorities the question of the Grand Canal section in Jiangsu province. Jiangsu officials and gentry had “officially intimated to the Cabinet their desire to have the improvement of the Grand Canal in their province undertaken at the same time as the work on the Shantung and Chihli sections of the Grand canal.” Therefore, Xiong went to Nanjing to act as a mediator in the “forthcoming peace conference between the North and South.” A public meeting was scheduled for 24 February 1919 with Xiong Xiling and the officials and gentry of Jiangsu province “to consider joining with Shantung and Chihli provinces in extending the improvement of the Canal to the Yangtze.”⁹⁰ The meeting was then re-scheduled for 10 March.⁹¹

In the southern portion of the Grand Canal below the Yellow River, Zhang Jian and other authorities showed “aversion” to joining to Shandong scheme. Authorities in Jiangsu province claimed to have sufficient funds of their own to do the work in their province, and wished to undertake the work on their own. According to the Jiangsu authorities, completion of the Shandong scheme would be damaging to Jiangsu, releasing flood water into the Jiangsu section of the canal.⁹²

⁸⁹ MIT: Paul S. Reinsch to Joseph Ripley, 11 December in Folder Joseph Ripley to J.R. Freeman July 1918 – March 1919 1 /2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁹⁰ MIT: Ripley to Freeman, 13 February 1919, Folder Ripley to Freeman July 1918-March 1919 2/2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁹¹ MIT: Ripley to Freeman, 24 February 1919, Folder Ripley to Freeman July 1918-March 1919 2/2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁹² MIT: 13 February 1919 Memorandum Folder Correspondence, Contracts Relating to the Agreement between the Government of China and the AIC. John Ripley Freeman Papers, 1827-1952. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

That spring 1919, Xiong attended several meetings in Nanjing with eighty members of the Jiangsu gentry in order to present his ideas on extending the work proposed in Zhili and Shandong provinces to the portion of the Grand Canal in Jiangsu. Although the gentry were supportive of Grand Canal improvement, they were decidedly adverse to contracting a foreign loan for the reclamation.⁹³ The central government in Beijing, however, were anxious to see that the conservancy work on the Jiangsu portion of the Grand Canal and the Huai River, be undertaken as soon as possible. To fund the project they would extract revenue from the land reclaimed from the river work.⁹⁴

By the 1st of April 1920, the Kiangsu Grand Canal Improvement Board was organized with its officers inaugurated in Yangzhou. Zhang Jian, who had been critical in the earlier organization of the failed Huai River relief, was appointed as the new Director-General. Han Kou Chun, the former Civil Governor of Jiangsu and Anhui provinces, was appointed the Assistant Director. Sun Pao Chung, the chief of the Huai River surveys of the last eight years was appointed the Chief Engineer, and Yang Baoling was appointed advisor. The Board maintained its own jurisdiction of responsibility as the stretch of the Grand Canal from Tsingkiangpu to Kouchow.⁹⁵

Members of the new Jiangsu Grand Canal Improvement Board collaborated with the Grand Canal Improvement Board based in Tianjin. That same year, the Acting Chief Engineer T.H. Wiggin was asked by Zhang Jian to inspect the locks on the Grand Canal in Jiangsu, for example. Yang Baoling, the new advisor for the Jiangsu Grand Canal

⁹³ MIT: 20 March 1919 AIC Peking Folder Correspondence, Contracts Relating to the Agreement between the Government of China and the AIC. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁹⁴ MIT: Gatrell Letter No. 121 of 24 March 1919 quoted in Philip W. Henry letter 30 April 1919. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

⁹⁵ "Notes", *JACAE* (September 1920), Peking, p. 32.

Improvement Board, continued to consult on hydraulic projects around the region, including advice on the canalization of the Hsiao Ching Ho in Shandong at the request of the province's governor.⁹⁶

Entwining Business and Philanthropy

The introduction of western hydraulic science and technologies in China had already begun in the nineteenth century, to varying degrees of receptivity.⁹⁷ The continuities in the globalization of hydraulic science between the late imperial and Republican periods can be manifestly seen not just in the institutional continuities and linkages. It can also be seen in the personal networks and travel of the involved engineers.

As part of his planning on the Grand Canal, in late summer 1919, Freeman made a world tour to observe the hydraulic works in Italy, France, England, India, Egypt, and Japan so he could acquire wider experiences and knowledge to place his investigation of the Grand Canal in a comparative and global context.⁹⁸ Such trips were of course expensive and required financial underwriting by the Chinese government. In April 1919, the Chief Engineer of the project Joseph Ripley was asked by Gatrell of the American International Corporation to write a letter of support addressed to the Director General Xiong Xiling for a further loan of \$20,000 for John Freeman to make an inspection trip to China. Ripley supported the loan, quoting extensively from Freeman's own earlier

⁹⁶ "Notes", *JACAE* (September 1920), Peking, p. 33.

⁹⁷ David Pietz, *The Yellow River*, pp. 79-81.

⁹⁸ MIT: Folder 1919-1920 Letters of introduction, news clippings, invitations 1/3. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

provisional report of February 1919. Ripley stressed the importance of getting expert opinion, drawing an analogy with disagreement among medical doctors for diagnosis or treatment: “Likewise engineers sometimes differ as to solution of their problems, for different values are given to the same known factor. Something obscure may be inadvertently overlooked or only partially determined. One may be biased in favor of or against certain features. Engineers of high standing and large experience maintain diametrically opposite views upon some fundamental questions, and especially is this true with regard to river control.”⁹⁹ A few months later, another substantial loan was agreed upon. On 8 July 1919 an agreement to a further loan of \$350,000 in gold to be used for completing the preliminary survey of the Grand Canal, which had been planned, initiated and prosecuted by an earlier agreement of 1 May 1918, was concluded by the AIC and the Chinese government.¹⁰⁰

The cooperation between the American International Corporation and the Chinese Government was celebrated by a succession of banquets held in Tianjin and Beijing and perhaps also indicates the shared and shifting power between the two cities during the early Republican period. The banquets both marked the start of the work as well as helped establish a common cultural narrative among the Chinese and American collaborators about the Grand Canal. On 6 October 1919 a dinner was held in honor of Freeman at The Astor House in Tianjin, one of the city’s most well-appointed hotels as well as the site of several important diplomatic meetings in the treaty port’s recent history. Joseph Ripley, the Chief Engineer, gave a speech, praising Freeman, with his 43

⁹⁹ MIT: Joseph Ripley Letter 10 April 1919. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

¹⁰⁰ MIT: John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

years of experience, as the most important hydraulic engineer in America. Cao Rui 曹銳¹⁰¹, the Civil Governor of Zhili province, gave a second speech, expressing thanks to the engineer Freeman and to Xiong Xiling. Xiong Xiling spoke next and at length on the Grand Canal. He placed the Grand Canal at the end of a number of recent efforts to introduce modern scientific methods in river management. He noted Chinese methods in water control as being empirical in nature and argued that the effort on the Grand Canal was more akin to the earlier efforts by Li Hongzhang to correct the Yellow River with the help of Dutch engineers and recently by Zhang Jian on the Huai River with the assistance of the American Red Cross. Perhaps as a nod to the host city's pride in its own river conservancy, Xiong noted that the success of the Hai River conservancy's application of Western methods on Chinese hydraulic systems was particularly important as Tianjin was the northernmost terminus of the Grand Canal and at the intersection of the Zhili river system.¹⁰²

On 25 October 1919 a second dinner was held in Beijing at the Navy Club in honor of Freeman and the Grand Canal Project. Director-General Xiong Xiling and Premier Jin Yunpeng presided over the dinner, with Assistant Director Generals Pan Fu and Yan Jiye. Several people gave speeches about the project. At the dinner, Xiong Xiling acknowledged the disruption caused by the warlord situation. Xiong complimented the American officers who had been stationed in Beijing during the 1918 floods and had

¹⁰¹ Cao Rui 1868-1924), Tianjin native and brother of Cao Kun 曹錕 (1862-1938) who had a prominent role in Beiyang politics. In the Qing dynasty, Cao Rui was a student of the Imperial Dynasty. Involved in suppressing the student May Fourth Movement, he managed several businesses while appointed Civil Governor of Chihli province. 天津近代人物录, pp. 320-321.

¹⁰² MIT: Folder Freeman to Stone 1918-1922 2/2. John Ripley Freeman Papers, 1827-1952. Box 123. MC 51.

offered to supervise the building of the Peking-Tungchow road by refugee labor. Xiong characterized this as an “unusual act of altruism.” Xiong then commented on the recent discussions of turning China’s various “semi-independent armies to road-building.” According to Xiong, good roads were of more immediate and important need than railroads: “medical assistance and education can never reach the bulk of China’s population which lives in the villages until [roads] exist. The danger of depredation which forces the peasants to live crowded together in insanitary villages and causes them to spend a large portion of their time going to and from the fields can never be removed without [roads].” Xiong noted that the Shanghai-Wusung road was being constructed along “lines of scientific construction for heavy traffic.” Military governor Yan Xishan 閻錫山 (1883-1960) of Shanxi had started putting his soldiers to work on building highways. The “Christian General” Feng Yuxiang 馮玉祥 (1882-1948) of Hunan was also engaged in road-building.¹⁰³

Freeman gave a speech to the dinner in which he outlined some of the technical details for the repair of the Grand Canal. As the \$6,000,000 in gold arranged for the contract between the International Corporation and the Chinese Government had limited value under the current exchange rate, Freeman thought that the main obstacle to the work was the “low value of Gold”. Mazuzan has argued that domestic Chinese politics

¹⁰³ MIT: Folder 1919-1920 Letters of Introduction 2/3. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51. For more on Yan Xishan see Donald G. Gillin, *Warlord: Yen Hsi-shan in Shansi Province, 1911-1949* (Princeton: Princeton University Press, 1967). For more on Feng Yuxiang see James E. Sheridan, *Chinese Warlord: The Career of Feng Yu-hsiang* (Stanford: Stanford University Press, 1966).

and interests were the most important obstacle,¹⁰⁴ but here we see that contemporaries cited the low value of gold. Although the large hydraulic machinery needed for work on the deeper sections of the canal would take over a year to arrive from America, the work on the shallow sections could be completed by hand labor.¹⁰⁵ In 1915, one American dollar was worth 2.42 yuan, but by 1919 one American dollar was worth just 1.08;¹⁰⁶ in other words the value of the American dollar in China more than halved between the time of the American International Corporation's establishment and when Freeman was in China making plans to start the work.

In response to the head of the Siems-Carey Railway Company W.F. Carey's request for an advance of \$100,000 in gold, the American International Corporation stipulated that the advance would have to be a separate loan, and "not dependent upon repayment from the bonds issued for the Canal improvement." The American International Corporation wanted Chinese parliamentary approval to the contract before they could consider the contract to be "legal and binding." When Carey relayed this to his Chinese counterpart, they replied "as far as this Government was concerned they considered the contract as legal and binding without any parliamentary approval." Carey emphasized "every other foreign government is regarding the acts of this Government as legal." Carey's plea to the American International Corporation had three parts. First, the engineering work on the canal would provide relief for the people living in the vicinity of

¹⁰⁴ Mazuzan, "'Our new gold goes adventuring': The American International Corporation in China," *Pacific Historical Review*, 43 (1974), 212-232.

¹⁰⁵ MIT: Folder 1919-1920 Letters of Introduction 2/3. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

¹⁰⁶ C.F. Remer, *Foreign Investments in China*, (New York: Macmillan Company, 1933), appendix, p. 172.

the canal. Secondly, the American International Corporation had a Japanese competitor who was “using every effort they can to induce the Chinese to borrow money from them in connection with the improvement of other portions of this area”; Carey had no doubt that given the opportunity, the Japanese would “instantly” take up the contract if they had the opportunity. Three, it was the American International Corporation’s responsibility to protect the American position in China.¹⁰⁷

After the formalities to commence the survey worked had finished, Freeman went on an inspection trip of the Yellow River with Yang Baoling of the Chihli River Commission. The survey resulted in a lengthy report. Freeman returned to America on 1 January 1920. On his return voyage home from Hong Kong, Freeman traveled by way of Singapore, Java, Rangoon, and Calcutta.¹⁰⁸ On 7 April 1920, a further loan was granted by the AIC: \$100,000 in gold for more preliminary survey work.¹⁰⁹

By spring 1921, the American International Corporation’s involvement in reclaiming the Grand Canal was at a standstill. In a letter to Yang Baoling, who was now the Chief Engineer of the Grand Canal Improvement Board with its base in Tianjin, Freeman wrote that the failure of the American International Corporation might be due to the fact that its Board of Directors was made up of “exceedingly strong personalities who had attained fame and fortune by such different roads that they were naturally of different minds.” Again, this is different from Mazuzan’s argument that unstable Chinese politics

¹⁰⁷ MIT: Folder Working Files, Oct. 1917-June 1919. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

¹⁰⁸ MIT: Folder 1919-1920 Letters of introduction, news clippings, invitations 1/3. Folder 1919-1920 Letters of Introduction 2/3. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

¹⁰⁹ MIT: John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

were the main obstacle:¹¹⁰ here we see Freeman attributing the problems to management and the global stock market: the strong personalities of the directors, the fluctuations of the stock market, and the now low value of gold and the American collar in compared to when the corporation was established in 1915. According to Freeman, success of the American International Corporation might have been greater if the enterprise had just been “dominated by one over-powering personality surrounded by men of good judgment but less assertive characteristics.” More important, however, were the financial losses and the decline in the market price of their stock, which resulted in a loss of thirty million dollars gold. Finding money for the Grand Canal project, then, would come slowly. Freeman also relayed to Yang that: “At Washington the general gossip is that the U.S. authorities are anxious to give something to China if they only knew a little more definitely who they could give it to.”¹¹¹ On 14 December 1921, Freeman wrote to Wong Kwong of the Yangtse Engineering Works: “No one dares to lend any money to China under present conditions. Therefore the Grand Canal Improvements are indefinitely postponed.”¹¹²

According to Michael Hunt, both the United States government and American businesses wanted an open China market.¹¹³ But the conditions within China were so unstable that it was not economically sound business to loan money to the government, or

¹¹⁰ Mazuzan, p. 231.

¹¹¹ MIT: Folder Working Files, Jan 1920 – Feb 1924 4/4. John Ripley Freeman Papers, 1827-1952. Box 128. MC 51.

¹¹² MIT: 14 December 1921 Freeman to Mr. Wong Kwong, Yangtse Engineering Works, Ltd. in Folder Working Files Vol. 1 Box 130. MC 51.

¹¹³ Michael H. Hunt, “Americans in the China Market: Economic Opportunities and Economic Nationalism, 1890s-1931”, *Business History Review*, Vol. 51, No. 3 (Autumn 1977), p. 297.

engage in large-scale infrastructural projects that were vulnerable to Japanese imperialism, local dissent and violence. As the AIC's involvement in the Grand Canal project came to an end, American President Wilson appointed the American Committee for China Fund in response to north China's agricultural disaster and 300,000 famine victims. Scholarship on famine relief in late imperial and Republican era China has stressed the role of local gentry and foreign missionaries. In an early work, Andrew Nathan highlighted the cooperation between American Protestant missionaries and local gentry in famine relief.¹¹⁴ However, American business interests played an important role as well. The line between philanthropy and business was blurred. As Chief Engineer of the project Joseph Ripley wrote: "My understanding is that the proposed contract for enlarging and modernizing about 200 miles of the Grand Canal originated from philanthropic motives, and that approved business methods were to be followed in carrying on the work so that there would not be disastrous losses or excessive profits."¹¹⁵ That those businessmen who were involved in the AIC project in China were also involved in China famine relief fund is revealing of this mindset: Thomas W. Lamont, a partner at J.P. Morgan, was the China Famine Fund's Chairman; Charles W. Eliot, President Emeritus of Harvard, was the chairman of the New England Committee; John Ripley Freeman was the Chairman of the Rhode Island Committee. When the AIC project in China did not look to be a viable business investment, those same business actors shifted to philanthropy instead.

Freeman's civic leadership ensured that the spirit of philanthropy crossed gender

¹¹⁴ Andrew James Nathan, *A History of the China International Famine Relief* (Harvard University Press, 1965).

¹¹⁵ MIT: Ripley to Freeman, 2 November 1918 in Folder Joseph Ripley to J.R. Freeman July 1918-March 1919 1/2. John Ripley Freeman Papers, 1827-1952. Box 125. MC 51.

and ethnic lines in his local Providence, Rhode Island. Freeman directed his pleas for donations to Christian groups, women's groups, and those with a professional or humanitarian interest in China. Women of the Providence clubs, numbering 150, were targeted to help as solicitors for donations.¹¹⁶ Several prominent Chinese-American citizens played a leading role in the committee while others contributed in other ways.¹¹⁷ One Chinese-American citizen Albert S. Wong, a proprietor of a large restaurant business in Rhode Island, hosted a dinner for the famine fund committee, signaling "his interest in the famine fund campaign by returning his table 'tips' to the committee as a contribution to the fund." Wong's letter to the committee, with appeals to humanity and Christianity, was reprinted in the local newspaper.¹¹⁸ To promote the fund-raising for the China Famine Relief, Freeman called upon colleagues who were China-related experts to organise a series of lectures at Brown University on the "conditions in China and the claim that China has on the goodwill of America."¹¹⁹ An exhibition of a movie depicting "conditions and carrying convincing arguments for America's liberal support of the relief work" and an exhibit of Chinese material culture was also arranged at the John Hay

¹¹⁶ MIT: "Women are asked to aid China fund" in *Providence Journal*, 5 April 1921 in Folder China Famine Fund – American Committee, 1921 ½. John Ripley Freeman Papers, 1827-1952. Box 124. MC 51.

¹¹⁷ MIT: "Chinese Actively Supporting Drive" in *Providence Journal*, 6 April 1921 in Folder China Famine Fund – American Committee, 1921 ½. John Ripley Freeman Papers, 1827-1952. Box 124. MC 51.

¹¹⁸ MIT: "China Famine Fund Drive is Started" in *Providence Journal*, 29 March 1921 in Folder China Famine Fund – American Committee, 1921 ½. John Ripley Freeman Papers, 1827-1952. Box 124. MC 51.

¹¹⁹ MIT: 4 April 1921 Freeman to Ferguson (Advisor to the Chinese Government) in Folder China Famine Fund – American Committee, 1921 ½. John Ripley Freeman Papers, 1827-1952. Box 124. MC 51.

Memorial Library at Brown University to help build up enthusiasm for the fund.¹²⁰

In China, local Chinese gentry established the North China International Society for Famine Relief with its base in Tianjin in late 1920. Freeman's principal engineer Joseph Ripley was in charge of the Red Cross Road building program in Shandong and his workers were chosen from the heads of families in the famine district. In exchange for their labor, they were paid a "catty of rice or wheat for completing a certain number of fongs [Chinese measurement term 方] of well-tamped road." The result of this system of payment was 500 miles of good dirt roads, well tamped, and "far better than anything in existence for many decades previously."¹²¹ Soldiers were also involved in the construction of infrastructure. According to Diana Lary, for many young men, enlistment in the army was a new route of economic mobility and immediate way out from rural poverty.¹²² During a time of disaster, north China saw unprecedented displacement: from the perspective of state-builders, construction work on roads and water correction seemed to be an ideal way to both provide work for refugees and to build state services.

Even after the phase of AIC involvement in China had long ended, Freeman continued to engage in China out of personal and professional interest, with a particular commitment to the China Famine Fund. Freeman's many trips and surveys along the Yellow river and the Grand Canal allowed him to have an eyewitness connection to China's economic and social situation, rousing his enduring interest in China's

¹²⁰ MIT: Folder China Famine Fund – American Committee, 1921 ½. John Ripley Freeman Papers, 1827-1952. Box 124. MC 51.

¹²¹ MIT: 7 November 1921 Freeman to Frank Chapman in Folder China Famine Fund 2/2. John Ripley Freeman Papers, 1827-1952. Box 123. MC 51.

¹²² Diana Lary, *Warlord Soldiers: Chinese Common Soldiers 1911-1937* (Cambridge: Cambridge University Press, 1985), pp. 5-6, 19.

development. By this time, American philanthropy had already evolved its own distinct identity of private interest and Protestant ethic in its pursuit of the “well-being of mankind” as a legitimate charitable purpose.¹²³ Previous scholarship has emphasized the role of Protestant missionaries in the American humanitarian engagement with China¹²⁴; indeed, as historian David A. Hollinger has shown, American Protestant missionaries and their children who had been so engaged, proved to be influential in shaping American policy toward China in the spheres of education and politics.¹²⁵ While financial profit may have been the primary motive for engineers and businessmen in China, the social appeal of humanitarianism also undergirded their projects.

The Grand Canal improvement project was at the center of a complex of interpersonal and institutional connections among China’s early twentieth-century water conservancy organizations, exemplifying how the Chinese republic’s hydraulic projects were embedded both in state building and international relations. This can be seen in the movements of its engineering staff. By April 1921, several staff had left the Grand Canal Improvement Board for other positions in China or had returned home. Oliver J. Todd, who had been the Principal Assistant Engineer, was now appointed the Field Manager of the China Famine Relief of the American Red Cross and based in Dezhou, Shandong. R.H. Merrill, another Principal Assistant Engineer, returned to his home in Fultonville, New York. G.S. Ling, who had been the designing Engineer had accepted a position with the Ministry of Interior as inspector of irrigation projects and departed for Hantan, where

¹²³ Zunz, p. 17.

¹²⁴ Ian Tyrell, *Reforming the World: the creation of America’s moral empire* (Princeton: Princeton University Press, 2010).

¹²⁵ David A. Hollinger, *Protestants Abroad: How Missionaries tried to change the world but changed America* (Princeton: Princeton University Press, 2018).

he was to be temporarily based. C. Tan, another designing engineer of the Grand Canal Improvement Board, accepted a position as the North China representative of Lam, Gilnes & Co. of Shanghai and New York, a company recently formed with Chinese and American capital with the primary purpose of importing of engineering materials into China.¹²⁶ By May, Thomas H. Wiggin had resigned from his post as Chief Engineer, to pursue other hydraulic projects in China, including an investigation of the proposed irrigation of land around Taiyuan in Shanxi province.¹²⁷

The Nationalists in Power and Rights-Recovery

As part of the story of the evolution of water conservancy organizations, let us now turn to the rights-recovery of the Hai River Conservancy and the Whangpoo Conservancy Board. During the Beiyang period, the Hai River Conservancy was quite active in dealing with the flooding problems of the Tianjin and Beijing area of 1917 and consulted in the formation of the Chihli River Commission and the Grand Canal Project. Interpersonal, political and institutional networks connected water conservancy projects that had an industrial or modern dimension in a national web that was embedded in international science.

The Nationalist Government restructured the government after 1927, in particular the institutional arrangements between the provincial and national level governmental organizations. As part of that restructuring, the Chili River Commission was subsumed under the National Reconstruction Commission 建設委員會 *Jianshe weiyuanhui* and renamed North China Water Control Committee 華北水利委員會 *Huabei shuili*

¹²⁶ “Personal”, *JACAE*, (April 1921), Peking, p. 40; ‘Personal’, *JACAE* (October 1920) Peking, p. 59.

¹²⁷ “Personal”, *JACAE* (April 1921), Peking, p. 43.

weiyuanhui in 1928, with its scope extending from the Yellow River to all lakes and waterways that led into Bohai, as well as the coastal areas.¹²⁸

In 1928, the head of the Tianjin Chamber of Commerce Zhang Pinti 張品題 (1877-1957)¹²⁹ approached the authorities of the recently created Hebei province (formerly Zhili province) on the question of the Hai River Conservancy's rights-recovery,¹³⁰ thereby marking the beginning of the Nationalist Government's aggressive rights-recovery of river conservancy organizations. On 10 January 1929, the Hai River Conservancy accounts were reorganized so that they would be jointly audited by two separate firms of chartered accountants, one Chinese and one foreign. To fund the new bonds issue, the river tax was increased from four to twelve per cent.¹³¹ In summer 1929, the Ministry for Foreign Affairs initiated lawyer Huang Zongfa 黃宗法 (1888-?)¹³² to start on the rights-recovery of the Hai River Conservancy.¹³³

¹²⁸ Zheng Zhaojing 鄭肇經, *Zhongguo shuili shi* 中國水利史, (1993 Beijing reprint, 1939 original), pp. 240-241. Zheng (1894-1989) studied abroad in Germany and was responsible for several economics and water control bureaus.

¹²⁹ In the source, he was identified as Zhang Zhongyuan, but his name is Zhang Pingti. Graduated from 直隶高等工业学校, present-day Hebei University of Technology. Studied abroad in Japan. He was a successful entrepreneur, having opened a number of factories and businesses. 1926-1937, was head of the Tianjin Chamber of Commerce until Japanese occupation. *Tianjin jindai renwulu* 天津近代人物录, (Tianjin: Tianjinshi difangzhi bianxiuwei yuanhui zongbianjishi chuban, 1987), pp. 229-230.

¹³⁰ *Tianjin haihe gongchengju wenti* 天津海河工程局問題, p. 15.

¹³¹ SMA: Q 264-1-364.

¹³² Huang Zongfa or Tzon-fah Hwang, born 1888 in Anhui, was University of Michigan Law School, class of 1914 graduate [extracted from University of Michigan website], J.S.D. degree, class of 1917 from New York University. Between 1918-1926 was secretary at the Ministry of Foreign Affairs. Huang was part of the Chinese delegation at the Washington Conference in 1921-1922. He was technical expert to the Customs Conference and Sino-Russian Conference in 1925-1926. After 1926, was Councillor to

Succession provided an opening for the government to open the doors wider to rights-recovery. On February 20, 1931, attorney Huang wrote a letter to Dr. Wang of the Ministry of Foreign Affairs concerning the renewal of employment contract for R.S. Campbell, secretary of the Hai River Conservancy. Campbell's employment contract had expired in August 1929 upon his return from home furlough. When he returned to Tianjin, he found the Hai River Conservancy board "beset by extraordinary problems of the first importance."¹³⁴ After seventeen months elapsed, Campbell moved to renew his contract, stressed the "permanent" nature of his appointment.¹³⁵ The Superintendent of Customs Han Lingshen questioned the validity of Campbell's request to renew his contract, citing universal employment norms in his refutation.¹³⁶ The case was then forwarded to Huang. Huang wrote in his memo:

This opportunity should not be lost. Here is a case where the foreign employee of an internationally controlled Chinese institution is clearly at fault. If this case is properly utilised, a long step will have been taken in retaking the Hai Ho Conservancy Commission from international control whose hold on a purely domestic and local harbour works has long ago ceased to be justifiable.¹³⁷

However, Huang cautioned, the selection of Campbell's successor was a sensitive matter; the successor should be of Chinese nationality, but there "must be absolute agreement

the Ministry of Foreign Affairs. From 1928 he was legal practitioner in Tianjin, and concurrently counsellor to the Tianjin city government, 1928-1932. *The China Year Book 1928*, ed. by H.G.W. Woodhead, p. 1130. *The China Year Book 1935*, ed. by Woodhead, p. 382. *China at the Conference: A report* (Baltimore: Johns Hopkins Press, 1922), p. 413. "N.Y.U. Graduation free from display" in *New York Times*, June 7, 1917 .

¹³³ AH: 0675-1035-0102, letter dated 28 January 1931.

¹³⁴ AH: 0675-1035-0102, letter dated 28 January 1931.

¹³⁵ AH: 0675-1035-0102.

¹³⁶ AH: 0675-1035-0102, letter dated 11 February 1931.

¹³⁷ AH: 0675-1035-0102, letter dated 20 February 1931.

between the local authorities and the Central Government in the selection,” and the appointee “must be capable enough to command the confidence of the local foreign as well as Chinese communities.”¹³⁸

1932 was a turning point year for the Nationalist Government: Wang Jingwei joined Chiang Kai-shek’s coalition government and was a part of the turn to economic nationalism.¹³⁹ The government tried to remake its institutions to take control over its economic institutions. Perhaps as a part of this new policy, the Chinese Minister of Finance T.V. Soong 宋子文 (1891-1971) became engaged in the rights recovery of the Whangpoo Conservancy. In June 1932, the representatives of the different foreign governments wrote to T.V. Soong, as members of the Whangpoo Conservancy’s Consultative Board, about the entirety of the Conservancy’s funds being transferred to the Bank of China. Soong invoked international law in response to this query. Since China’s tariff autonomy treaties were signed in December 1928, there was considerable pressure to assert China’s sovereignty over water conservancy.¹⁴⁰

In May and June of 1932, several of the foreign legations, including Spain, Britain, the Netherlands, France, Japan, and the United States addressed the Ministry of Foreign Affairs concerning the proposed restructuring of the Hai River Conservancy. The Nationalist Government wanted to subsume the Hai River Conservancy under Hebei province, which had been formed from the dissolved Zhili province after 1928. The foreign legations recognized the broader issue of a coherent provincial-wide river

¹³⁸ AH: 0675-1035-0102, letter dated 20 February 1931.

¹³⁹ Margherita Zanasi, *Saving the Nation: Economic Modernity in Republican China* (University of Chicago Press, 2006), p. 25.

¹⁴⁰ AH: 020-990400-0003, letter dated 11 June 1932 and 25 June 1932.

conservancy but nonetheless urged that the Hai River Conservancy retain its current organizational form at least until there was more stability in the political situation.¹⁴¹

There were other points of friction between the Qing-era treaty port river conservancy organizations and the nation- and provincial-wide water conservancy organizations formed during the Republican era. In 1931 a “palliative scheme” was in place, by which the silt-laden waters of the Hai river’s tributaries were diverted into a basin and then the clear water led back to the Hai river. Meanwhile there were continuing conflicts between the Hai River Conservancy and the North China Conservancy Commission about the methods for dealing with the waterways of Hebei province, which included the Hai River. The central government supported the North China Conservancy Commission’s claims that “the control of conservancy work on all the rivers should be unified under their control.” Yet, the local Chinese and foreign commercial interests at Tianjin were united in wanting the “palliative scheme” to remain in place as it had been so far successful in keeping the Hai river navigable for steam shipping.¹⁴²

National sovereignty and rights-recovery were of primary concern for the Republican government. Yet, it was impossible to differentiate China’s hydraulic infrastructure from its international trade and international interests; in fact, the Chinese national economy was intertwined with its international trade. Tomoko Shiroyama has made a similar argument: the decision by the Nationalist government to sacrifice its

¹⁴¹ AH: 0675-1035-0104, correspondence dated May 1932.

¹⁴² AH: 020-990400-006, Nanjing, 13 October 1932.

autonomy in fiscal policy reflected “the close linkage between the Chinese economy and the world economy in the early twentieth century.”¹⁴³

The struggle for the rights-recovery of the Hai River Conservancy, whose headquarters at Tianjin lay at the intersection of five rivers responsible for the recent flood disasters that had affected the safety and subsistence of north China, as well as the international trade connected to the treaty port, was particularly contentious. The revenue of the Hai River Conservancy was guaranteed by a tax from the maritime customs revenue which was coveted by the cash-strapped newly formed Hebei government for its provincial water conservancy projects. Yet, it was the Hai River Conservancy, whose personnel and expertise were accessible to Beijing, the national capital until 1928 that provided the organizational model and precedent for the evolution of subsequent Chinese water conservancy organizations.

Conclusion

The Grand Canal reclamation project failed, but its failure is nonetheless worth studying. That the Chinese government now entered into an agreement with the Americans is indicative of the more diminished role of European powers since the First World War. China’s domestic political situation hinged on the larger international geopolitical one, and the agreement between the American International Corporation and Chinese government was indicative of a new kind of geopolitical order that was qualitatively different from a world dominated by the European powers. Although there were similarities in the methods and institutions of the water conservancy organizations

¹⁴³ Tomoko Shiroyama, *China During the Great Depression: Market, State, and the World Economy, 1929-1937* (Cambridge: Harvard University Press, 2008), p. 10.

of the post-Boxer Protocol period and the collaborations of the Republican era, there were also significant differences. The new government was still dependent on financial backing from foreign powers to contract loans for hydraulic projects, and financial agreements were contingent upon the feasibility of the plans themselves. Just as foreign engineers staffed the treaty port conservancy organizations, the American International Corporation stipulated that its American engineer John Ripley Freeman oversee and vouch for the viability of the project. The new Beijing government was in some ways weaker than the post-Boxer Protocol Reforms-era government: it had to cooperate with both Jiangsu and Shandong provincial gentry to enact changes on the land. Despite deep investments of time and talent in preparation for the Grand Canal's reconstruction, the work was never carried out.

Nevertheless, the institutional origin of the Grand Canal Project in the work of the treaty-port conservancy boards is important. The successes of the two treaty port river conservancy organizations, in particular those of the Hai River Conservancy, constituted a significant and promising precedent that led directly to the establishment of the Chihli River Commission in response to the devastating 1917 flood. Even after American corporate involvement with China's water control had ended, the Chihli River Commission continued its work through the 1920s. That the Chihli River Commission had the support of the Beiyang government belies our perception that the Chinese state during the "warlord" period was uninterested in the building of public goods.

The cooperation between the American International Corporation and the Beijing government was roughly contemporaneous with the writing and the publication of Sun Yat-sen's 1921 *The International Development of China*, which also called for the

international financing of infrastructure projects in different areas of China. Sun was a critic of the Beijing government, and perhaps for this reason did not mention the Grand Canal project; nonetheless the construction of other transport and communications infrastructure with the support of international financing and cooperation was the centerpiece of his vision—he shared more with the Beijing government than he acknowledged.

Committed to the ideology of modernization, developmental organizations had their origins in the official aid programs tied to the Truman Doctrine of 1947 and were a tool to deal with the new decolonizing postcolonial order.¹⁴⁴ Michael Latham has shown that modernization was an ideology that “embodied a long-standing conviction that the United States could fundamentally direct and accelerate the historical course of the postcolonial world.”¹⁴⁵ To call the American International Corporation’s mission statement or Wilsonian foreign policy part of a modernization program would be anachronistic since it was not yet a postcolonial time, but certainly the principles of modernization were at the core of the corporation’s vision for its various and far-flung infrastructure projects. It is appropriate, I argue, to call the American International Corporation’s engagement with the Grand Canal project developmental. Development, according to Frederick Cooper and Randall Packard, implies a relationship between “industrialized, affluent nations and poor, emerging nations.” Unlike the earlier

¹⁴⁴ Frederick Cooper and Randall Packard, “Introduction” in *International Development and the Social Sciences*, ed. Frederick Cooper and Randall Packard, (University of California Press, 1997), p. 1; David Ekbladh, *The Great American Mission: Modernization and the Construction of an American World Order* (Princeton: Princeton University Press, 2010), pp. 2-3.

¹⁴⁵ Michael E. Latham, *The Right Kind of Revolution: Modernization, Development, and U.S. Foreign Policy from the Cold War to the Present* (Ithaca: Cornell University Press, 2011), p. 2.

prevailing ideology of “inherent superiority” or a “civilizing mission”, developmentalism implied a shared conviction among the political leaders of “underdeveloped” societies as well as those of affluent nations, which was the “alleviation of poverty,” in other words, development. Development required a “concerted intervention of both poor and wealthy countries in cooperation with an emerging body of international aid and development organizations.”¹⁴⁶

John Ripley Freeman played a central role in facilitating the scientific, organizational and interpersonal exchanges between America, China and Germany. As is evident from his exhaustive material and archival records, Freeman was indeed a tireless correspondent and activist, attentive to hydraulic works and developments in China and elsewhere in the world. Such men of science were linked together through their common professional interest as well as goal for developmentalism and nation building. Both Chinese government leaders and American businessmen and engineers shared a similar faith in the power of infrastructure development to improve society and enrich the nation.

The rights-recovery of the post-Boxer imperial era river conservancy organizations between 1928 and 1932 showed that national sovereignty was a centerpiece of the Republican Chinese government’s foreign relations – just as it was for all decolonizing, postcolonial nation-states of the post-World War Two era. There were fiscal motivations behind the rights-recovery: the river conservancy organizations at Shanghai and Tianjin had stable and lucrative financial source bases that the cash-strapped Republican government wished to manipulate. The foreign governments were correct to be suspicious, and perhaps for that reason the Republican government did not

¹⁴⁶ Frederick Cooper and Randall Packard, p. 1.

press too hard for rights-recovery. As for the other nation-wide and provincial water conservancy organizations that were established during this time, they were firmly under national Chinese control. The question of sovereignty was at the center of Chinese hydraulic and other infrastructural works during this time: one reason why the American International Corporation-financed Grand Canal project could not go further lay precisely in the compromised sovereignty of the Shandong portion of the Grand Canal during the period of Japanese occupation.

To what degree was the American International Corporation responsible for its own failure, and to what degree were the conditions in China responsible? According to Pomeranz and Mazuzan, Chinese domestic political instability and the growing position of Japan both worked to prevent the realization of the Grand Canal project. In negotiating with the Chinese, the American International Corporation displayed lack of understanding for the Chinese cultural context and “an American fussiness for legalisms and contracts.”¹⁴⁷ While the falling value of the American dollar has been recognized as one important factor for the lack of funds for the project, the fundamental reason for the failure of the Grand Canal project had to do with the contentious politics at Beijing. The Beiyang government was keen to form the Chihli River Commission and to cooperate with the American International Corporation to deal with the environmental disaster and social suffering in and surrounding the capital following the 1917 flood. These institutional initiatives had their precedent in the earlier international treaty port conservancy boards.

Interpersonal and institutional networks were important for the evolution of late

¹⁴⁷ Mazuzan, p. 231.

Qing and Republican era institutions. The First World War temporarily pulled the Europeans out of China and offered Japan an opportunity to intervene, most notably with the occupation of the German leasehold in Shandong and the Twenty-One Demands, which stimulated protest against the government and undermined its legitimacy and effectiveness. In turn, this caused instability in Beijing politics, which could be seen during the 1920s in the shifting of power toward Tianjin. The loss of authority of the Beijing government was a key reason why the project failed. Developmentalism requires a national state with a central government and China during the early Republican period did not have a central government.

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JACAE: Journal of the Association of Chinese & American Engineers

PAAA: Political Archive of the Foreign Ministry, Berlin, Germany.

PKU: Peking University Library, Beijing, China.

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